

### **Remarks**

Claims 36, 38, 40-42, 46, 47, 49, 50, 53, 57, 59, 66, and 67 have been amended. New claims 80 and 81 have been added. Claims 1-35, 37, 44, 45, 51, 52, 54-56, 58, and 62-65 were cancelled in a previous Response(s). Claims 68-79 have been withdrawn from consideration. Claims 36, 38-43, 46-50, 53, 57, 59-61, 66, 67, 80, and 81 are presented for the Examiner's review and consideration. Applicant believes the claim amendments and accompanying remarks herein serve to clarify the present invention and are independent of patentability. No new matter has been added.

### **Amendments to the Claims**

It is noted that the references to the application made herein are meant only to represent examples of support for amendments, and are not a comprehensive list of support. The amendments to the claims and the arguments presented throughout this Response may be supported in other parts of the application that are not referenced.

No new matter has been added by the amendments to claim 36 made herein. This claim has been amended to clarify that the removal apparatus includes a shaft that is at least partially flexible, and due to the flexibility, guiding of the apparatus is not limited to a straight line. This concept is supported throughout the specification as originally filed. For example, *see* the claims as originally filed; paragraphs [0012]; [0015]; [0053]; and [0060]-[0062]; Figures 9-11, 15, and 16 of the published application, U.S. Patent Application Publication 2002/0029055 A1; hereinafter "published application."

No new matter has been added by the amendments to claims 38, 40-42, 46, 47, 49, 50, 53, 57, 59, 66, and 67 made herein. These claims have been amended only to provide consistency of language and proper antecedent basis for all terms recited therein.

No new matter has been added by the addition of claims 80 and 81 made herein. These claims were added to clarify that control of the rigidity of the removal apparatus can be obtained by introducing a sleeve having a plurality of inflatable elements. By selectively and individually

inflating/deflating the inflatable elements, one can form the removal apparatus into any desired shape or position. This concept is supported throughout the specification as originally filed. For example, *see* paragraphs [0060]-[0062] and Figures 15 and 16 of the published application.

#### Restriction

Claims 68-79 have been withdrawn from consideration, as the Examiner asserts that these claims are directed to an invention that is independent or distinct from the originally-presented invention.

Applicant respectfully disagrees. Claims 68-79 are drawn to a method for using body tissue, wherein the body tissue is bone. The restriction requirement, mailed on December 2, 2002, divided the pending claims into two groups as follows:

- I. Claim 1, drawn to a tissue removal apparatus, classified in class 606, subclass 80; and
- II. Claims 36 and 37, drawn to a method of using body tissue, classified in class 606, subclass 167.

In the Response, filed on December 31, 2002, Applicants elected the method of Group II for prosecution on the merits. This method is not limited to any specific body tissue. Thus, Applicant respectfully requests reconsideration and rejoining of claims 68-79.

#### Rejection under 35 U.S.C. §112, first paragraph

Claim 46 was rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement, as the claim allegedly contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner deems the recitation of "...separated portions of fetal tissue are combined with bone growth promoting substances..." to be new matter. The Examiner admits that the disclosure, as originally filed, provides support for removal of bone

tissue, fetal tissue etc. but does not provide support for separating the fetal tissue, combining the separated fetal tissue with bone growth promoting substances and reimplanting the separated fetal tissue in a patient.

Applicant respectfully disagrees.

*In ipsius verbis* (in the same words) disclosure is not necessary to satisfy the written description requirement of section 112. Instead, the disclosure need only reasonably convey to persons skilled in the art that the inventor had possession of the subject matter in question. *Fujikawa v. Wattanasin*, 93 F.3d 1559 (Fed. Cir. 1996).

If a skilled artisan would have understood the inventor to be in possession of the claimed invention at the time of filing, even if every nuance of the claims is not explicitly described in the specification, then the adequate description requirement is met. See, e.g., *Vas-Cath*, 935 F.2d at 1563, 19 USPQ2d at 1116; *Martin v. Johnson*, 454 F.2d 746, 751, 172 USPQ 391, 395 (CCPA 1972) (stating "the description need not be in ipsius verbis [i.e., "in the same words"] to be sufficient"). MPEP 2163, 8th Ed. Rev. 6 (2008).

Preparation of harvested graft material is described in paragraphs [0064]-[0068] of the published application. Paragraph [0065] states:

“The surgeon can also place other substances into the graft material to be implanted, such as other tissue graft material, collagen, antibiotics, or ceramic hydroxyapatite or tricalcium phosphate to aid in bone ingrowth.” Emphasis added herein by Applicant.

Thus, the specification, as originally filed, specifically states that the substances ceramic hydroxyapatite or tricalcium phosphate can be added to the graft material to promote bone growth. One of ordinary skill in the art would understand “bone growth promoting substances” to aid in bone ingrowth.

Furthermore, even if the specification only stated that ceramic hydroxyapatite or tricalcium phosphate can be added to the graft material, one of skill in the art would know these substances to be “bone growth promoting.” For example, *see* U.S. Patent No. 5,571,186, which described compositions containing hydroxyapatite and tricalcium phosphate as “bone growth

promoting” as of the 1990’s.

In light of the above, one of skill in the art would recognize the bone growth promoting properties of hydroxyapatite and tricalcium phosphate without any explicitly statement thereof in the specification.

Accordingly, Applicant respectfully submits that the written description requirement has been satisfied and requests reconsideration and withdrawal of this rejection.

#### Rejections under 35 U.S.C. §103(a)

Claims 36, 38-40, 46-50, 53, 57, 59-61, 66, and 67 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rudall et al. (Biology of the Skin and Hair Growth, American Elsevier Publishing Company, Inc., Chapter 5, pages 75-88, 1965; hereinafter “Rudall”) in view of Kellogg (U.S. Patent No. 3,606,878; hereinafter “Kellogg”). For all reasons set forth below, Applicant respectfully submits that this rejection should be withdrawn.

It is noted that the references are described separately only in order to clarify what each reference teaches and not to argue the references separately. The combined teachings of the references are discussed below in the section entitled “Argument.”

#### Rudall

Rudall discloses a procedure for removal of skin from fetal lambs, storing the skin, and grafting the skin back to the lambs after birth. *See* Methods A-B, pages 76-78. In order to access the fetal lambs, the uterus was exteriorized through a six inch paramedial incision in the abdominal wall and wrapped in towels soaked in warm saline. *See* Methods A. pages 76-77.

#### Kellogg

Kellogg discloses an instrument for extracting biopsy sections. The instrument includes a hollow needle, a tubular cutter, and an actuator rod. The cutter is removably slidable in the needle passage. The user places pressure on the outer end of the actuator rod and the cutter

moves forward to sever the tissue. The tissue is drawn into a side port adjacent to the needle tip by suction. *See* abstract and column 2, lines 4-22.

### Instant Invention

The instant invention, as currently claimed in independent claim 36, provides a method of using fetal tissue for harvesting and implantation into the donor of the tissue or a different patient. The method includes inserting a removal apparatus into a donor through a percutaneous incision, guiding the removal apparatus to a desired location within the donor's body, separating portions of fetal tissue from other portions of the donor, moving the separated portions of fetal tissue along a passage in the removal apparatus by suction, maintaining sterility of the removed separated portions of fetal tissue for harvesting and transplantation, and implanting the separated portions of fetal tissue. The removal apparatus has a shaft that is at least partially flexible such that the removal apparatus can be moved along a non-linear path and is not limited to movement in a straight line. This method is supported throughout the specification as originally filed. For example see paragraphs [0012]; [0013]; [0015]; and [0034] of the published application.

### Argument

The Examiner concludes that using the device of Kellogg in the methods of Rudall obviously results with the claimed method. In support of her conclusion, the Examiner starts with the assertion that all method steps are disclosed by Rudall.

In response, Applicant respectfully disagrees and submits that the combination of Rudall in view of Kellogg does not obviate the method as currently claimed.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

The invention, as currently claimed in independent claim 36, recites, *inter alia*, a method for using body tissue including inserting a removal apparatus into a donor through a percutaneous incision, guiding the removal apparatus to a desired location within the donor's

body, separating portions of fetal tissue from other portions of the donor, moving the separated portions of fetal tissue along a passage in the removal apparatus by suction, maintaining sterility of the removed separated portions of fetal tissue for harvesting and transplantation, and implanting the separated portions of fetal tissue. The removal apparatus has a shaft that is at least partially flexible such that the removal apparatus can be moved along a non-linear path and is not limited to movement in a straight line.

As established above, Rudall clearly describes a six inch open incision. Furthermore, the uterus was “exteriorized” from the body of the ewe to obtain access to the fetal lambs. *See* Methods A. pages 76-77. In contrast, the claimed method is carried out through a small, percutaneous incision. For example, a surgeon obtains access to the donor’s body, separates the tissue, and removes the tissue all through the one incision. The fetal tissue is accessed without exteriorizing the uterus. *See* paragraph [0012] of the published application.

Regarding Kellogg, the Examiner asserts that the patent teaches a needle instrument for biopsy or tissue extraction including: a rigid outer member or cannula (**10**); a flexible shaft (**22**) connected to a cutting tip (**24**, **26**), the cutting tip having aspiration openings **26a** and **26b** spaced from a distal end of the cutting tip.

Applicant respectfully disagrees with the Examiner’s interpretation of the elements described by Kellogg. While it may be said that the instrument of Kellogg can be inserted using a percutaneous incision, the instrument is not at all applicable in the methods described by Rudall. Kellogg’s instrument has a hollow needle body **10** with a bluntly-pointed tip **12**. A cylindrical cutter knife **24** is slidably received in the needle body **10**. An actuator rod **22** is connected to the knife **24**. *See* column 2, lines 10-13; 40-43; and 62-64. In operation, the surgeon applies a forward thrust to the rod **22** to advance the cutter **24** in a forward direction to cut the tissue. *See* column 3, lines 60-63 and column 4, lines 22-33. No where does Kellogg state or suggest flexibility of rod **22**. In fact, use of a flexible rod would render the instrument ineffective for its purpose. Rod **22** is an actuator rod which transfers force to the cutter **24** to advance the cutter. If rod **22** was flexible, it would buckle under the application of force, and thus be unable to advance the cutter **24**.

Neither Rudall nor Kellogg teaches or suggests a method in which removal of tissue is achieved by a removal apparatus having a flexible shaft that is movable along a non-linear path. Thus, even if one of ordinary skill in the art attempted to combine these references, one would still be lacking elements and thus would not obtain the method as currently claimed. Therefore, the combination of Rudall and Kellogg is not sufficient to establish a proper case of *prima facie* obviousness, as the combination does not teach or suggest all of the limitations of the method as currently claimed.

Furthermore, even if the cited references (Rudall and Kellogg) were combinable to produce the claimed method, in order to establish a proper case of *prima facie* obviousness, the prior art must also suggest the desirability of the claimed invention.

According to *KSR (KSR International Co. v. Teleflex, Inc., U.S., 127 S.Ct. 1727, 1734, 82 U.S.P.Q.2d 1385 (2007))* there still must be an apparent reason to combine the known elements in the fashion claimed by the patent at issue. “To facilitate review, this analysis should be made explicit.” (*Id* at 1741) As directed in the MPEP:

To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

MPEP § 706.02(j) quoting *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a cutting device, as taught by Kellogg, to cut tissue in the practice of Rudall since it was well known to use suction in conjunction with cutting to aid in extraction of tissue.

Applicant respectfully submits that this conclusion is not relevant, as the addition of suction does not produce the claimed method from the combination of Rudall and Kellogg. Furthermore, Kellogg’s instrument is a biopsy device and is not intended to preserve tissue for later implantation *in vivo*. It is rigid and has blunt portions. *See* column 2, lines 40-43. The

blunt portions would damage the fetus and/or move around the fetus to pull tissue in from the sides. Thus, one of ordinary skill in the art would not even think to apply an instrument such as that of Kellogg in the methods of Rudall.

As noted above, independent claim 36, now recites, *inter alia*, a method for using body tissue including inserting a removal apparatus into a donor through a percutaneous incision, guiding the removal apparatus to a desired location within the donor's body, separating portions of fetal tissue from other portions of the donor, moving the separated portions of fetal tissue along a passage in the removal apparatus by suction, maintaining sterility of the removed separated portions of fetal tissue for harvesting and transplantation, and implanting the separated portions of fetal tissue. The removal apparatus has a shaft that is at least partially flexible such that the removal apparatus can be moved along a non-linear path and is not limited to movement in a straight line.

Based on all of the above arguments, neither the cited references (Rudall and Kellogg) nor any other prior art teach or suggest the method as currently claimed. Accordingly, Applicant respectfully submits that claim 36 is patentable over Rudall in view of Kellogg. As claims 38-43, 46-50, 53, 57, 59-61, 66, 67, 80, and 81 depend from claim 36 these dependent claims necessarily include all of the elements of the base claim. Thus, Applicant respectfully submits that the dependent claims are allowable over Rudall in view of Kellogg for at least the same reasons.

In light of the foregoing, Applicant respectfully requests reconsideration and withdrawal of this rejection under 35 U.S.C. §103(a).

Claims 36, 40-42, 46-49, 50, and 67 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kantoff et al. (Blood 73(4):1066-1073 1989; hereinafter "Kantoff") in view of Golbus et al. (The Western Journal of Medicine 150:423-430 1989; hereinafter "Golbus"). Claim 43 was rejected under 35 U.S.C. §103(a) as being unpatentable over Kantoff in view of Golbus and further in view of Martell (U.S. Patent No. 4,373,535; hereinafter "Martell"). For all reasons set forth below, Applicant respectfully submits that this rejection should be withdrawn.



It is noted that the references are described separately only in order to clarify what each reference teaches and not to argue the references separately. The combined teachings of the references are discussed below in the section entitled "Argument."

#### Kantoff

Kantoff discloses a sheep transplantation model for *in utero* gene transfer and expression. In order to establish his model, Kantoff first obtains hematopoietic cells from fetal sheep using exchange transfusion. Retroviral-mediated gene transfer was then used to insert a Neo R gene into the cells obtained. The cells were then reinfused into the donor fetus. After birth, the lambs were examined for evidence of expression of the Neo R gene. *See* abstract and page 1066, right column.

#### Golbus

Golbus teaches a method for prenatal diagnosis of genetic defects. The diagnosis was obtained by fetal blood sampling, fetal skin biopsy, or fetal liver biopsy. *See* abstract and the section entitled "Patients and Methods."

#### Martell

Martell discloses a venting, self-stopping, aspirating syringe. The syringe does not require the plunger to be pushed back by blood pressure and does require timely withdrawal from an artery. *See* abstract and column 1, lines 7-11. The plunger can be preset to obtain a precise quantity of blood and when the blood has been acquired the blood flow stops. *See* column 2, lines 38-47.

The teachings of the instant invention are applied as above.

### Argument

The Examiner asserts that Kantoff teaches all of the method steps with the exception of the use of suction. However, according to the Examiner, Golbus teaches the use of suction to draw tissue into a syringe and thus, can obviously be combined with Kantoff to produce the claimed method.

In response, Applicant respectfully disagrees and submits that the combination of Kantoff in view of Golbus does not obviate the method as currently claimed.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

The invention, as currently claimed in independent claim 36, recites, *inter alia*, a method for using body tissue including inserting a removal apparatus into a donor through a percutaneous incision, guiding the removal apparatus to a desired location within the donor's body, separating portions of fetal tissue from other portions of the donor, moving the separated portions of fetal tissue along a passage in the removal apparatus by suction, maintaining sterility of the removed separated portions of fetal tissue for harvesting and transplantation, and implanting the separated portions of fetal tissue. The removal apparatus has a shaft that is at least partially flexible such that the removal apparatus can be moved along a non-linear path and is not limited to movement in a straight line.

The "sheep transplantation model" described by Kantoff is intended to assist with finding treatments for genetic disorders by manipulation of genes. Kantoff provides limited information on the method or apparatus used to obtain the cells from the donor and states only that the cells were obtained by exchange transfusion through a catheter placed in the carotid artery of the donor. Kantoff does not describe flexible instruments or any directional movement through tissue. In contrast, when carrying out the claimed method, a surgeon uses a removal apparatus having a shaft that is at least partially flexible that can provide movement along a non-linear path through the tissue.

Additionally, Kantoff teaches removal of blood from the fetus and replacement of the

blood with maternal blood. The “buffy coat” cells are separated from other blood components after removal from the fetus. There is no disclosure of separation of portions of fetal tissue prior to actual removal. In contrast, when carrying out the claimed method, the surgeon first separates portions of fetal tissue from other portions of the donor fetus and then moves the separated portions along a passage.

As established above, Golbus discloses fetal biopsy alone and does not provide any teaching of transplanting cells obtained from biopsy. Furthermore, Golbus does not mention flexible instruments or describe any directional movement through tissue.

Neither Kantoff nor Golbus teaches or suggests a method in which removal of tissue is achieved by a removal apparatus having a flexible shaft that can move along a non-linear path. Thus, even if one of ordinary skill in the art attempted to combine these references, one would still be lacking elements and thus would not obtain the method as currently claimed. Therefore, the combination of Kantoff and Golbus is not sufficient to establish a proper case of *prima facie* obviousness, as the combination does not teach or suggest all of the limitations of the method as currently claimed.

Furthermore, even if the cited references (Kantoff and Golbus) were combinable to produce the claimed method, in order to establish a proper case of *prima facie* obviousness, the prior art must also suggest the desirability of the claimed invention.

According to *KSR (KSR International Co. v. Teleflex, Inc., U.S., 127 S.Ct. 1727, 1734, 82 U.S.P.Q.2d 1385 (2007))* there still must be an apparent reason to combine the known elements in the fashion claimed by the patent at issue. “To facilitate review, this analysis should be made explicit.” (*Id* at 1741) As directed in the MPEP:

To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

MPEP § 706.02(j) quoting *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a syringe, as taught by Golbus, for extraction of fetal blood as in the method of Kantoff since it was well known to use a syringe with negative pressure or suction to draw a fetal tissue sample.

Applicant respectfully submits that this conclusion is not relevant, as the use of a syringe such as that disclosed by Golbus does not produce the claimed method from the combination Kantoff and Golbus.

Furthermore, Kantoff describes gene transfer. Golbus's instrument is a biopsy device and is not intended to preserve tissue for later implantation *in vivo*. Thus, one of ordinary skill in the art would not consider the methods of Kantoff and Golbus as related technologies and would never consider using a syringe such as that of Golbus in the methods of Kantoff.

As noted above, independent claim 36, now recites, *inter alia*, a method for using body tissue including inserting a removal apparatus into a donor through a percutaneous incision, guiding the removal apparatus to a desired location within the donor's body, separating portions of fetal tissue from other portions of the donor, moving the separated portions of fetal tissue along a passage in the removal apparatus by suction, maintaining sterility of the removed separated portions of fetal tissue for harvesting and transplantation, and implanting the separated portions of fetal tissue. The removal apparatus has a shaft that is at least partially flexible such that the removal apparatus can be moved along a non-linear path and is not limited to movement in a straight line.

Based on all of the above arguments, neither the cited references (Kantoff and Golbus) nor any other prior art teach or suggest the method as currently claimed. Accordingly, Applicant respectfully submits that claim 36 is patentable over Kantoff in view of Golbus. As claims 38-43, 46-50, 53, 57, 59-61, 66, 67, 80, and 81 depend from claim 36 these dependent claims necessarily include all of the elements of the base claim. Thus, Applicant respectfully submits that the dependent claims are allowable over Kantoff in view of Golbus for at least the same reasons.

Regarding the rejection of claim 43, the addition of a filter as described by Martell does

nothing to remedy the deficiencies of Kantoff and Golbus as described above. Accordingly, Applicant respectfully submits that claim 43 is allowable over Kantoff and Golbus in view of Martell.

In light of the foregoing, Applicant respectfully requests reconsideration and withdrawal of these rejections under 35 U.S.C. §103(a).

### **Conclusion**

In light of the foregoing amendments and remarks this application is now in condition for allowance, and early passage of this case to issue is respectfully requested. If any questions remain regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned. The fee for a one month extension of time pursuant to 1.17(a)(1) in the amount of \$65 and the fee for two dependent claims pursuant to 1.16(i) in the amount of \$52 are believed to be due and are being paid via credit card. No other fees are believed to be due at this time. However, please charge any other fee required (or credit any overpayment) to the Deposit Account of the undersigned, Account No. 503410 (Docket No. 780-A02-014-7).

Respectfully submitted,  
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